MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

2020 Report to the Governor

Capacity Development

Technical - Managerial - Financial

Public Drinking Water Branch
September 2020

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Executive Summary

In accordance with section 1420(c) of the Safe Drinking Water Act, Missouri is required to develop and implement a capacity development strategy to assist public water systems in acquiring and maintaining technical, managerial, and financial capacity to receive the state's full allotment of Drinking Water State Revolving Fund Capitalization Grant funds. The act also requires Missouri to submit a report on the strategy's effectiveness to the Governor every three years and make the report available to the public. This report fulfills that requirement and is available online at ***dnr.mo.gov***.

This report covers the Missouri Department of Natural Resources' (Department) activities implemented from July 1, 2017, through June 30, 2020. At the end of calendar year 2017, the percent of Missouri's population served by community water systems that met all health-based standards was 96.9%. At the end of the reporting period, the percentage had increased to 98.4%.

At the end of state fiscal year 2020, Missouri had 1,428 community water systems, 220 nontransient noncommunity water systems, and 1,092 transient noncommunity water systems. In accordance with the capacity development strategy for new public water systems, the Department issued 29 new permits to community and nontransient noncommunity water systems commencing operation after October 1, 1999.

The Department implements its capacity development activities based on public water system interest, regulatory changes, and trends in compliance. Department team members, technical assistance providers, and external organizations assist public water systems to acquire and maintain technical, managerial, and financial capacity. During the reporting period, Department staff in our central and field offices conducted more than 16,000 compliance and technical assistance activities, held 350 drinking water operator pre-certification classes, issued 86 estimated casing depth letters, performed one comprehensive performance evaluation, assisted with responding to natural disasters, and improved communication and public engagement with drinking water systems through online platforms and public meetings of the Safe Drinking Water Commission.

Technical assistance providers helped support and implement the capacity development strategy for existing public water systems through federal grants and contracts with the Department. Under the Environmental Protection Agency's Training and Technical Assistance Grant, technical assistance providers offered 37 free drinking water-related trainings and conducted more than 158 technical assistance activities. The Department contracted with the Missouri Rural Water Association for public water system assistance to address technical, managerial, and financial capacity challenges. Under this contract, the Missouri Rural Water Association conducted 917 capacity development-related assistance activities and helped public water systems conserve approximately 155 million gallons of nonrevenue water.

The Department also provided financial assistance to public water systems to improve the technical, managerial, and financial capacity of Missouri's public water systems. During the reporting period, the Department awarded $811,732 in engineering report services grants, $240,681 in source water protection and abandoned well plugging grants, and processed $770,455 in vouchers for continuing education of certified operators.

Missouri's Capacity Development Strategy

The Missouri Department of Natural Resources (Department) is pleased to present the 2020 Capacity Development Report on the effectiveness of the State's capacity development strategy and progress toward improving the technical, managerial, and financial (TMF) capacity of the State's public water systems to Missouri's 57th Governor, Michael L. Parson.

In accordance with section 1420(c) of the Safe Drinking Water Act, Missouri is required to develop and implement a capacity development strategy to assist public water systems in acquiring and maintaining TMF capacity. The act also requires Missouri to submit a report on the strategy's effectiveness to the Governor every three years and make the report available to the public. This report fulfills that requirement and is available online at ***dnr.mo.gov***.

Public water system: A system for the provision of piped water to the public for human consumption, if the system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.

Existing public water system: A public water system that commenced operation on or before October 1, 1999.

New public water system: A public water system that commenced operation after October 1, 1999.

Technical capacity: The physical and operational ability of a public water system to meet Safe Drinking Water Act requirements. Technical capacity includes source water adequacy, infrastructure adequacy, and technical knowledge and implementation.

Managerial capacity: The ability of a public water system to conduct its affairs in a manner enabling the system to achieve and maintain compliance with Safe Drinking Water Act requirements. Managerial capacity refers to the system's institutional and administrative capabilities, and includes ownership accountability, staffing and organization, and effective external linkages.

Financial capacity: The ability of a public water system to acquire and manage sufficient financial resources to allow the system to achieve and maintain compliance with Safe Drinking Water Act requirements. Financial capacity includes revenue sufficiency, credit worthiness, and fiscal management and controls.

Missouri recognizes that providing safe and reliable drinking water is essential to protect human health, promote social wellbeing, and stimulate economic development. Missouri created its capacity development strategy for new and existing public water systems to provide a framework for sustainable, long-term operations of public water systems. The Department prepared its capacity development strategy for new public water systems in 1999 and received U.S. Environmental Protection Agency (EPA) approval for the strategy the same year. The capacity development strategy for new public water systems requires all community and nontransient noncommunity water systems commencing operation after October 1,

1999, to demonstrate TMF capacity as part of the process to obtain a permit to dispense drinking water to the public. The Department developed the capacity development strategy for existing public water systems with stakeholder input in 1999, which EPA approved in 2000. The capacity development strategy for existing systems includes ten elements for improving the TMF capacity of all public water systems in the state, regardless of the date the public water system commenced operation. Over time, the Department has adjusted implementation of the strategy to meet the needs of Missouri's public water systems and ensure the strategy's effectiveness.

Community water system: A public water system that serves at least 15 service connections and is operated on a year-round basis or regularly serves at least 25 residents on a year-round basis.

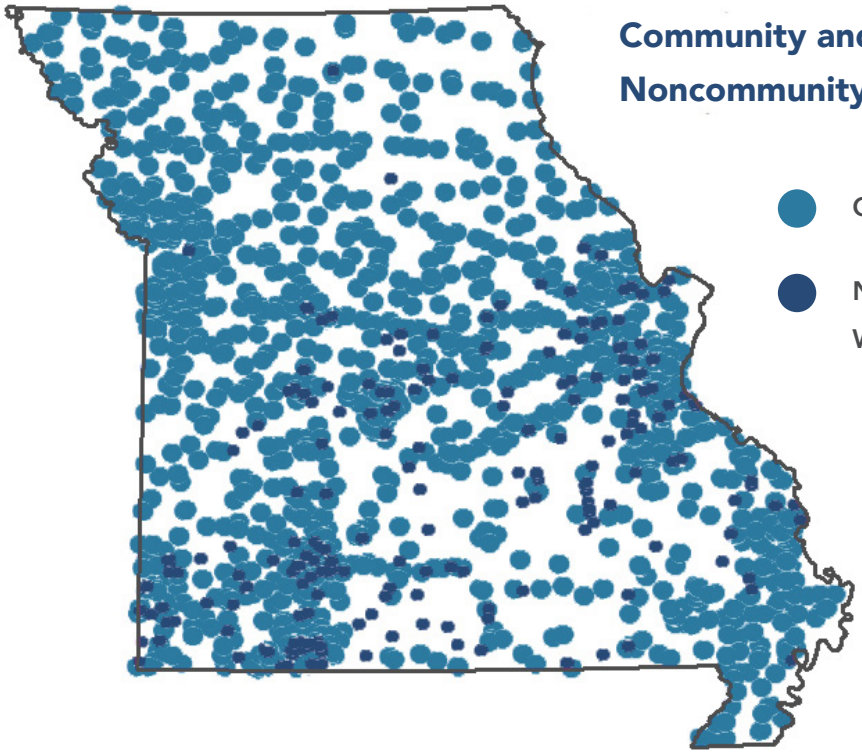
Nontransient noncommunity water system: A public water system that is not a community water system and that regularly serves at least 25 of the same persons over six months per year.

Transient noncommunity water system: A public water system that is not a community water system, which has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.

The capacity development strategies align with the Department's mission to protect our air, land, water, and mineral resources; preserve our unique natural and historic places; and provide recreational and learning opportunities while promoting the environmentally sound and energy-efficient operations of businesses, communities, agriculture, and industry for the benefit of all Missourians. In addition, development and implementation of the capacity development strategies for new and existing public water systems allows Missouri to receive the full allotment of EPA Drinking Water State Revolving Fund Capitalization Grant funds. The Department uses these funds to provide low-interest capital improvement loans to public water systems and to fund public drinking water assistance efforts in Missouri, including capacity development.

Strategy Implementation and Effectiveness

This report covers activities from July 1, 2017, through June 30, 2020 (state fiscal years 2018 through 2020). At the end of the reporting period, Missouri had 1,428 community water systems, 220 nontransient noncommunity water systems, and 1,092 transient noncommunity water systems. Missouri's capacity development strategy primarily focuses on community and nontransient noncommunity water systems. The figure on the following page shows the location of all active community and nontransient noncommunity water systems in the State at the end of state fiscal year 2020.



Community and Nontransient Noncommunity Water Systems of Missouri

- Community Water System
- Nontransient Noncommunity Water System

Capacity Development for New Public Water Systems

In accordance with the Safe Drinking Water Act, Missouri requires all community and nontransient noncommunity water systems commencing operation after October 1, 1999, to demonstrate TMF capacity with respect to national drinking water regulations as part of the capacity development strategy for new public water systems. In accordance with state regulations, the Department assesses TMF capacity for new community and nontransient noncommunity water systems undergoing the construction authorization process and Permit to Dispense approval process. During the reporting period, the Department issued 452 Permits to Dispense to public water systems, including 29 new community and nontransient noncommunity water systems that required the demonstration of TMF capacity. During the reporting period, the Department also issued 1,364 construction authorization permits to new and existing public water systems.

Permits are valid only for the continuing operating authority that applied for the permit. Public water systems must notify the Department prior to transferring ownership of the public water system to another organization, entity, or person. During the reporting period, the Department issued 56 permit transfers to community water systems and two permit transfers to nontransient noncommunity water systems.

Continuing operating authority: The permanent organization, entity, or person identified on the permit to dispense water who is responsible for the management, operation, replacement, maintenance, and modernization of the public water system in compliance with the Missouri Safe Drinking Water Law and rules.

Capacity Development for Existing Public Water Systems

The Department's capacity development strategy for existing public water systems encompasses ten elements to improve TMF capacity at existing public water systems. The Department implements these elements in a variety of ways, including direct assistance, operator certification training, public drinking water decision-maker training, financial assistance, partnerships with external organizations, and public engagement. The Department prioritizes and implements capacity development activities using feedback from public water systems received through the TMF capacity survey, trends in noncompliance, direct requests for assistance, input from field staff, and changes to drinking water regulations.

Missouri's Capacity Development Strategy-Elements for Existing Public Water Systems

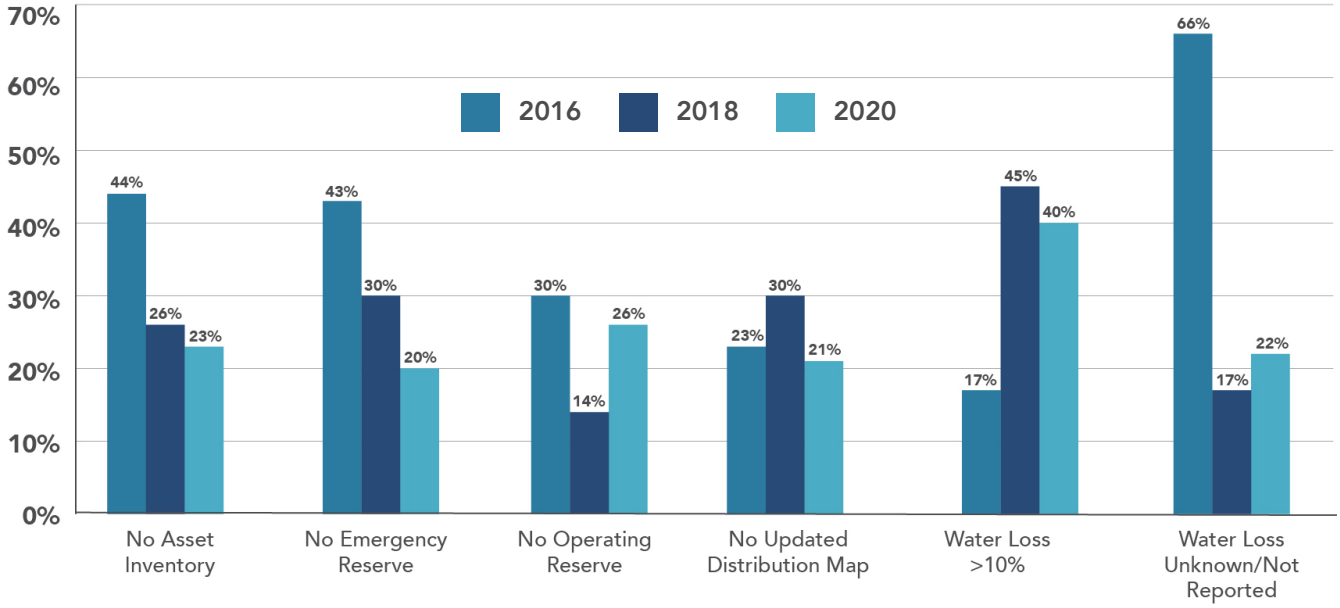
1. Improve public water system knowledge of current and future rules and regulations.
2. Improve communication and trust among all partners.
3. Engage with citizens and public water systems on the importance of safe drinking water.
4. Encourage partnerships between agencies and public water systems.
5. Improve interagency and intra-agency communication for TMF capacity-related programs.
6. Coordinate capital resources.
7. Continue rate setting and financial management training for small public water systems.
8. Increase planning in rural areas.
9. Develop and provide board member training and TMF capacity materials and training to public water system decision makers.
10. Continue to collect baseline data to measure the success of TMF capacity activities.

TMF Survey

In 2018 and 2020, the Department surveyed community and nontransient noncommunity water systems to assess TMF capacity. This voluntary biennial survey collects baseline data to measure the success of TMF capacity activities and collects stakeholder input on capacity development activities. Beginning in 2018, the Department migrated the biennial TMF capacity survey to a paperless, web-based platform. By providing the survey electronically, the Department improved data integrity while reducing costs associated with mailing the survey, entering data, and processing.

The survey helps identify TMF challenges and analyze trends. The Department continues to see a decline in the percentage of public water systems reporting they do not have asset inventories or updated distribution maps, or reporting a water loss of greater than ten percent. In 2018 and 2020, the Department linked to a water loss calculator in the online survey, resulting in a decrease in the percentage of water systems reporting unknown water loss, as seen in the chart on the following page.

Biennial TMF Capacity Survey



The survey also provides public water systems an opportunity to express interest in assistance types. The Department uses this information to prioritize training and technical assistance opportunities for the two years following the survey. The table below depicts the 2020 survey results for the percentage of public water systems that expressed interest in each type of assistance. Interest in leak detection and water loss assistance continues to outpace all other assistance type categories.

2020 Biennial TMF Capacity Survey - Public Water System Interest

Assistance Category	Percent Interest (%)	Assistance Category	Percent Interest (%)
Leak Detection	**48.3**	Board and Council Training	**20.8**
Water Loss	**39.2**	Budget	**20.0**
Valve/Hydrant Exercising	**34.2**	Treatment Optimization	**20.0**
Mapping	**31.7**	Asset Management	**19.2**
Flushing	**30.8**	Lead & Copper	**18.3**
Capital Improvement Plan	**26.7**	Sampling Techniques/ Monitoring	**15.0**
Succession Planning	**25.8**	Water Age	**13.3**
Source Water Protection	**25.0**	DBP Reduction	**12.5**
Valve Location	**25.0**	Energy Use Assessment	**10.0**
Water Rates	**24.2**	Consolidation/Regionalization	**9.2**
Disinfectant	**23.3**	Consumer Confidence Report	**9.2**
Asset Inventory	**22.5**	Producer/Purchaser Meeting	**3.3**
Distribution Optimization	**22.5**	RTCR Assessments	**3.3**

The survey also contains a question asking public water systems if they are interested in learning about funding opportunities available through the Department. The Department uses the responses from this question to coordinate capital resources and conduct outreach to public water systems on available financial assistance. During the 2020 TMF capacity survey, public water systems expressed the most interest in infrastructure loans or grants, followed by engineering report services grants, small borrower loans, and abandoned well plugging grants.

Operator Certification

At the end of state fiscal year 2020, Missouri had 1,648 public water systems that required a certified operator. Drinking water operators are responsible for maintaining the safe and reliable operation of drinking water treatment and distribution facilities. The Department provides operators the opportunity to acquire the knowledge, skill, and ability to perform their duties. The Department also keeps operators apprised of new regulations and emerging technologies through operator certification voucher and training programs. During the reporting period, the Department provided 350 pre-certification and renewal-hour classes to 6,159 attendees. These and other Department-wide efforts helped significantly reduce the number of public water systems without a properly certified operator from 378 in state fiscal year 2009 to 20 at the end of state fiscal year 2020, which equates to 98.8 percent compliance.

Drinking Water Voucher Program

The Department issues drinking water training vouchers annually to approximately 1,500 community and nontransient noncommunity water systems serving 3,300 people or less. Water system personnel may use the vouchers to pay operator certification fees and eligible drinking water operator training fees. This program supports multiple elements of the capacity development strategy, including improving public water system knowledge of current and future rules and regulations, as well as engaging with citizens and public water systems on the importance of safe drinking water. During the reporting period, the Department processed $770,455 in vouchers, with 3,791 vouchers used for training and 1,012 vouchers used for certification fees.

Water and Wastewater Training Program for Prisoners

The Missouri Department of Natural Resources and the Missouri Department of Corrections partnered to develop a special initiative called the Water and Wastewater Training Program for Prisoners. Created in 2017, the program contributes to workforce development and provides career opportunities for former prisoners. The Department hosts drinking water distribution and wastewater treatment courses for offenders in Missouri prisons. At the course's conclusion, attendees take an operator certification exam to become certified operators at the wastewater treatment Level D and drinking water distribution Level 1. Department team members work closely with the Department of Corrections' Re-entry Coordinator to provide follow-up information to probation and parole offices about potential employment opportunities for those completing the program. This program supports multiple elements of the capacity development strategy, such as encouraging partnerships between agencies and public water systems and improving interagency and intra-agency communication for TMF capacity-related programs.

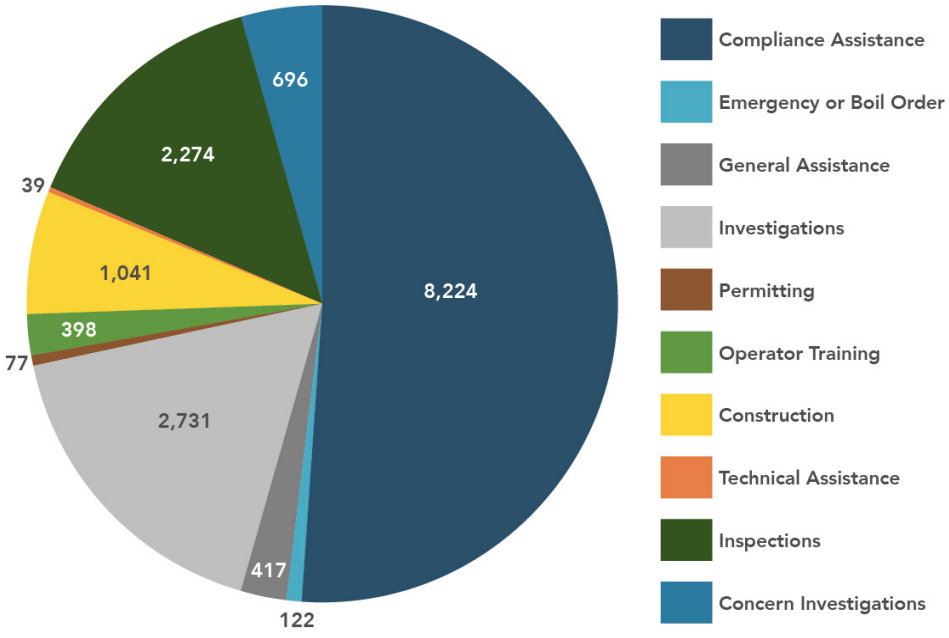
Water and Wastewater Treatment Workers Week

The Department continues to highlight careers in drinking water or wastewater system operations. To highlight the important work of operators, the Department continues to develop new opportunities to engage with citizens and public water systems on the importance of safe drinking water. In 2019, Governor Parson signed a proclamation declaring August 18–24, 2019, as Water and Wastewater Treatment Workers Week in Missouri. Representatives of the water and wastewater industry attended the proclamation signing, and the Governor recognized the vital role water and wastewater professionals play in our daily lives and the critical services they provide to our state. Governor Parson signed a similar proclamation in 2020, recognizing these workers during the week of August 16–22, 2020.

Field Compliance Assistance

The Department has field staff located in six offices across the State. Field staff help public water systems achieve and maintain TMF capacity through compliance and technical assistance with emergency or boil orders, permitting, operator training, and construction, as well as conducting inspections and investigating concerns. The figure below outlines field assistance activities during the reporting period. Field staff also provide recommendations to public water systems on drinking water operations and potential cost saving measures. The efforts of field staff support many elements of the capacity development strategy, including improving communication and trust among all partners.

Field Efforts SFY2018-2020



The Department provides in-person and online training, including TMF training, to field staff to equip them with the knowledge required to perform their duties effectively and efficiently. The TMF training provided to field staff in 2020 included information on TMF services available through technical assistance provider contracts, rate and reserves, source water protection plans, mapping, and project funding for water systems. In addition to training, the Department continues to promote intra-agency communication and collaboration for TMF capacity-related activities through policy and topic workgroups, automated tools for communication, structured communication efforts, and public water system treatment tours.

State Employees of the Month

Tony Kerley, with the Southeast Regional Office, received both the Department Employee of the Month and State Employee of the Month awards in November 2019 for his efforts to assist a local water district in restoring water service after it experienced unexpected technical difficulties. Tony responded immediately to the concern, worked late on the weekend to make sure water service was restored the same day, helped the public water system collect samples, provided technical assistance for the chlorine feed pump setting, and advised district board members on the regulatory requirements that had to be met to deliver safe drinking water to customers.

Deric Calvert, with the Southeast Regional Office, received both the Department Employee of the Month and State Employee of the Month awards in May 2018 for his fast response and onsite assistance to city officials and other citizens immediately after an F2 tornado hit the community of Malden. Deric's initiative and responsiveness facilitated response and recovery efforts between the Department and the city. Calvert assisted the public water system in obtaining permits and volunteered to meet with city officials to tour the disaster-torn neighborhoods.

Chlorine Compliance Assistance

During the reporting period, the Department developed a compliance-assistance tool to identify public water systems struggling to maintain chlorine levels in the distribution system or failing to report chlorine concentrations with their bacteriological samples. Failure to follow proper sampling protocols may be a sign of TMF capacity issues. By querying chlorine data weekly, the Department can identify potential issues and field staff can offer timely compliance assistance.

Missouri Geological Survey

The Department provides assistance to groundwater systems with design and construction of public drinking water wells. Improperly constructed and poorly sited water wells can result in unnecessary long-term expenditures for a public water system, reducing its TMF capacity. In order to reduce the likelihood of this occurring, the Department performs a site survey of any proposed well location for new wells serving public water systems to verify that the proposed site meets all setback distances. Setback distances help protect public health and the well's integrity. In addition, the Department's Missouri Geological Survey provides estimated casing depths, estimated total depths, and estimated yields to help public water systems determine if a proposed well location will meet their needs before incurring any drilling costs. During the reporting period, the Department issued 86 estimated casing depth letters to community and nontransient noncommunity water systems. Because the Department works with public water systems throughout this process, it can more effectively establish communication and trust with public water systems, supporting the capacity development strategy.

Technical Assistance Providers

Water Management Workshops

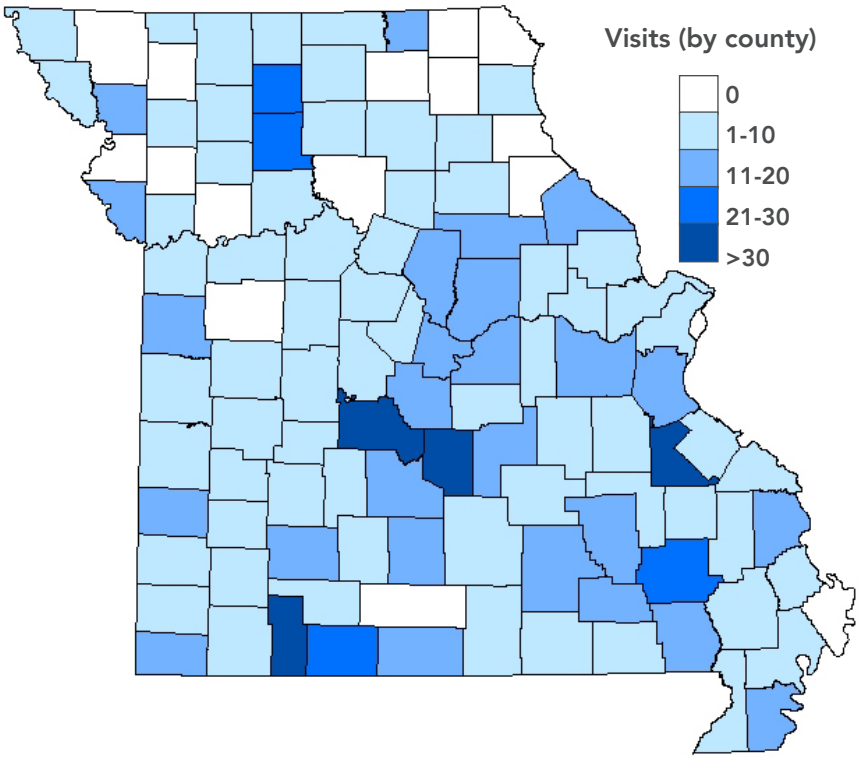
In 2017 and 2018, the Department contracted with the Missouri Rural Water Association to provide water management workshops to decision-makers at public water systems, including board and council members. The workshops improved decision-maker knowledge and involvement in public water system management and operation, and directly supported the capacity development strategy of providing board member training, as well as TMF capacity materials and training to public water system decision-makers.

Workshop topics included water system regulations, board member roles and responsibilities, asset management, rates, and project financing. The workshops also focused on connecting the technical, managerial, and financial aspects of operating a public water system. During the reporting period, the association conducted eight water management workshops, reaching over 100 public water system decision-makers.

Public Drinking Water Assistance Services

The Department contracts with technical experts from the Missouri Rural Water Association, known as circuit riders, to assist public water systems facing TMF capacity challenges. The circuit riders provide assistance with water loss, rates and reserves, treatment, disinfection, asset management, distribution mapping, natural disasters, operator certification, board member roles and responsibilities, and source water protection. Circuit riders focus their efforts primarily on small public water systems that can experience difficulty obtaining resources to achieve and maintain TMF capacity. During the reporting period, circuit riders provided 917 assistance activities to 355 public water systems. Circuit riders provide assistance to public water systems around the State as depicted in the figure on the following page.

Circuit Rider Assistance Efforts SFY2018-2020



In the last three fiscal years, circuit riders provided 63 public water systems with assistance in setting sustainable rates by conducting a rate assessment. Rate assessments help public water systems' operational and management personnel understand the necessity of rate adjustments in order to collect sufficient revenues to operate the water system. Upon request from the public water system, the circuit rider presents the rate assessment findings to the public water system's board or council. Public water systems that receive this type of assistance may also receive financial management training for budgeting, training on asset inventory and asset management, and training on strategic planning.

Because of the high level of interest and requests for leak detection assistance, the Department provided more water loss and leak detection efforts than any other assistance type. Water loss and leak detection visits help public water systems identify nonrevenue water, including physical losses of water, as well as apparent losses (water consumed but not accounted for). During the reporting period, circuit riders conducted 246 leak location visits, with 199 of those visits resulting in a positive detection. Of the visits where a circuit rider identified one or more leaks, 83 percent of public water systems repaired the leak. Public water systems that repaired leaks saved an estimated 155 million gallons of nonrevenue drinking water during the reporting period.

During the reporting period, public water systems saved enough water to fill nearly 235 Olympic-sized swimming pools because of circuit rider leak detection efforts.

Circuit riders also provided assistance to public water systems during historic flooding in 2017 and 2019, and during the 2018 drought. Emergency visits from circuit riders were related to water loss and leak detection, main location and repair, and restoration of water services.

EPA Training and Technical Assistance for Small Systems Grant

The Department partners with external technical assistance providers under the EPA Training and Technical Assistance for Small Systems Grant to determine priority topics for training and technical assistance. Training and technical assistance provided under this grant covers a range of TMF concepts and supports many elements of our capacity development strategy, including improving public water systems' knowledge of current and future regulations and engaging with citizens and public water systems on the importance of safe drinking water.

Midwest Assistance Program

The Department partnered with the Midwest Assistance Program to assist public water systems in achieving and maintaining compliance with the Safe Drinking Water Act. As a result, in 2018 the Midwest Assistance Program assisted eight public water systems in resolving 26 public notice violations. In addition, the program provided one small systems' training for water operators and one training for board members and clerks.

Environmental Finance Center

The Department partnered with the Wichita State University Environmental Finance Center to provide an asset management and energy efficiency training course in 2018 and two capital improvement planning courses in 2019. Technical experts from the Environmental Finance Center provided guidance on future planning, asset management, and financial sustainability to public water systems, covering a range of TMF topics during trainings.

Missouri Rural Water Association

In addition to the water management workshops and circuit rider assistance described above, the Department partnered with the Missouri Rural Water Association to provide both technical assistance and training to public water systems. During the reporting period, the Missouri Rural Water Association performed 158 technical assistance visits to assist public water systems with disinfection byproducts, jar testing, groundwater treatment, resolution of violations, and distribution water quality and treatment. The association also provided 31 workshops covering a wide range of drinking water topics, including distribution system components and concepts, drinking water regulations updates, monitoring and managing distribution systems, and pump station maintenance.

Disinfection Byproducts

The Department continues to work with public water systems to provide assistance, guidance, and oversight for monitoring and compliance of disinfection byproducts. The Department helps public water systems develop sampling schedules and identify sampling locations, and provides guidance on sample collection and analyses. The Department provides disinfection byproduct assistance directly through its central and field offices, and through partnerships with other

agencies. Technical assistance promotes many elements of the capacity development strategy, including improving public water systems' knowledge of current and future regulations, and encouraging partnerships between agencies and public water systems.

University Partnerships

Disinfection byproduct formation is complicated and specific to the characteristics of each raw water source, treatment plant configuration, and overall water plant operational practices. During the reporting period, the Department contracted with the University of Missouri – Columbia Research Center to study the formation of disinfection byproducts at small community water systems with Stage 2 compliance issues. From 2012–2019, the research center evaluated the disinfection byproduct monitoring and compliance of sixteen public water systems.

The Department also administered a contract with the Missouri University of Science and Technology to address significant issues faced by the State with respect to drinking water quality and treatment. This agreement provides an important proactive approach to help public water systems provide safe drinking water by studying emerging contaminants and water treatment processes related to disinfection byproduct formation and providing recommendations to improve drinking water quality. From 2018–2019, the university completed three disinfection byproduct studies and presented the final reports, including recommendations, to participating public water systems.

Disinfection Byproduct Case Study

In 2019, the Department collaborated with EPA to conduct a case study of disinfection byproduct maximum contaminant level exceedances in public water systems. During the study, the Department established disinfection byproduct baseline levels for thirteen public water systems in Missouri.

Disinfection Byproduct Mediation

Disinfection byproducts compliance issues affect both primary and consecutive water systems. During the reporting period, in an effort to assist consecutive systems experiencing these issues, the Department arranged four meetings between primary and consecutive systems. The meetings provided an opportunity for primary and consecutive systems to discuss disinfection byproducts-related issues and collaborate on potential solutions.

Primary public water system: A public water system which obtains its source of water directly from a well, infiltration gallery, lake, reservoir, river, spring, or stream.

Consecutive system: A public water system that receives some or all of its finished water from one or more wholesale systems. Delivery may be through a direct connection or through the distribution system of one or more consecutive systems.

Drinking Water Grants

The Department offers several grant opportunities to public water systems to improve compliance with safe drinking water regulations and improve TMF capacity. The grant programs support many elements of the capacity development strategy, including encouraging partnerships between agencies and public water systems, coordinating capital resources, and increasing planning in rural areas.

Permits and Engineering

The Department offers Engineering Report Services grants to community water systems serving populations of 3,300 or fewer. Engineering reports help community water systems select cost-effective solutions to TMF challenges, including compliance with national primary drinking water regulations and Missouri safe drinking water regulations. Depending on a community's needs, recommended solutions may include restructuring, regionalization, operational changes, treatment changes, and infrastructure improvements, as well as other technical, managerial, or financial improvements. During the reporting period, the Department awarded $811,732 to 44 community water systems.

Source Water Protection

Missouri's Source Water Protection Program engages with public water systems and citizens through a voluntary program to help communities develop sustainable drinking water supplies. During the reporting period, the Department offered Source Water Protection grants to primary public water systems to promote source water protection awareness, develop source water protection plans, implement watershed best-management practices, and install wellhead protection measures. During the reporting period, the Department awarded grants to five public water systems, totaling $101,743.

Groundwater-based community water systems serve more than 2.1 million Missouri residents. The estimated 500,000 abandoned water wells across the state present a real and serious threat to Missouri's groundwater aquifers if not properly abandoned. The Department offered Abandoned Well Plugging grants to groundwater-based public water systems to plug abandoned water wells that exist within the public water system's source water or service area. During the reporting period, the Department awarded grants to fourteen public water systems for a total of $138,938 in assistance for well-plugging activities.

Since 2006, the Department has assisted public water systems in plugging 140 abandoned water wells.

Area-Wide Optimization Program

The Area-Wide Optimization Program, which is a national initiative, assists surface water systems in optimizing treatment processes in order to increase public health protection. The goals of the Area-Wide Optimization Program are to introduce water systems to the program, encourage partnerships, increase communication between the Department and public water systems, develop guidance materials for system operators to assist with online monitoring equipment, and conduct Comprehensive Performance Evaluations of surface water systems to assist and promote resolution of current treatment issues.

A Comprehensive Performance Evaluation is a thorough review and analysis of a water treatment plant's performance-based capabilities and associated administrative and operation and maintenance practices. These performance evaluations support several elements of the capacity development strategy, such as promoting partnerships between agencies and public water systems. In 2017, the Area-Wide Optimization Program team conducted a Comprehensive Performance Evaluation at a surface-water treatment plant to address turbidity exceedances and the plant's failure to record and report turbidity data to the Department. In 2018, EPA's Technical Support Center conducted a training evaluation for the City of Perryville. Department technical staff and EPA Region 7 representatives also attended the training. The training taught attendees to determine how to improve water quality and optimize system integrity. The Area-Wide Optimization Program team can use the knowledge gained during these performance evaluations to assist other public water systems and share the information at future workshops.

Compliance and Enforcement

As the primacy agency in Missouri for implementation of the Safe Drinking Water Act, the Department is responsible for enforcing state drinking water regulations. The Department publishes an Annual Compliance Report of Missouri Public Water Systems. At the end of calendar year 2017, the percentage of Missouri's population served by community water systems that met all health-based standards was 96.9%. At the end of the reporting period, the percentage had increased to 98.4%.

Significant Noncompliance

During the reporting period, the Department considered 267 public water systems to be priority systems due to significant noncompliance for drinking water-related violations. Of these, 238 are no longer priority systems because of assistance efforts and enforcement actions taken by the Department. One form of assistance that Department field staff use is a bilateral compliance agreement. Of the systems that entered into a bilateral compliance agreement with the Department, 88 percent were successful in returning to compliance without further enforcement actions.

If a public water system cannot achieve compliance through assistance efforts, the Department initiates formal enforcement action. When a community or nontransient noncommunity water system enters into an administrative order with the Department to correct significant noncompliance, the Department conducts a TMF review to determine if there are technical, managerial, or financial concerns affecting the system's ability to return to compliance.

Natural Disaster and Pandemic Response

During the reporting period, Missouri experienced a drought in 2018, extensive flooding in 2019, and the COVID-19 pandemic beginning in 2020. Throughout all of these events, the Department continued to provide services to public water systems, including funding for drought-impacted communities, development of drought-specific guidance documents, and technical assistance to communities experiencing turbidity issues during flooding. The Department partnered with

the Missouri Public Utility Alliance, the Missouri Rural Water Association, and EPA to host a free drought and water loss workshop in 2019. In response to the COVID-19 pandemic, the Department provided online operator certification training. Because virtual training reduced travel time and costs for the Department and participants, the Department plans to continue offering virtual training courses, where appropriate.

Consolidation and Regionalization

In an effort to help small public water systems reach and maintain TMF capacity, the Department promotes consolidation and regionalization of Missouri's water and wastewater systems. The Department's goal is to impact 25 percent of water and wastewater systems in five years. In order to accomplish this goal, the Department developed several tools, including fact sheets and an online map, for water and wastewater systems to explore consolidation and regionalization opportunities. Since the beginning of 2019, the Department assisted 33 public water systems in consolidation and regionalization efforts.

Communication and Public Engagement

A key element of the Department's capacity development strategy is to engage with citizens and public water systems on the importance of safe drinking water. The Department uses many avenues to promote TMF capacity to public water systems.

Safe Drinking Water Commission

The Safe Drinking Water Commission adopts regulations for the implementation, administration, and enforcement of Missouri's safe drinking water statutes, approves the Drinking Water State Revolving Fund Intended Use Plan for grants and loans, sets the primacy fee, and advises the Department about various drinking water issues. Commission members represent various sized public water systems and Missouri citizens. Commission meetings are open to the public and provide a valuable conduit for stakeholder input on drinking water related issues, including capacity development activities.

Templates and Fact Sheets

The Department continues to develop and revise fact sheets and templates to provide guidance and recommendations on procedures and processes at public water systems. During the reporting period, this included fact sheets to promote water conservation, identify water leaks, and promote the benefits of consolidation and regionalization. All Department publications are available to the public on the Department's website.

Water and Wastewater Digest

The Water and Wastewater Digest, a quarterly newsletter, keeps drinking water and wastewater operators informed about the Department's drinking water-related activities, regulatory issues, voucher program, testing, and operator certification. The Department routinely uses the Digest as a platform for highlighting capacity development activities and assistance efforts. The Digest is available on the Department's website and is distributed to more than 3,300 certified operators.

PhoneTree

In 2018, the Department piloted an automated notification system, known as PhoneTree, and continued using the software through 2020. The Department uses the system to generate automated phone calls to public water systems as a reminder of upcoming deadlines concerning consumer confidence reports, lab services fees, and other monitoring or reporting requirements. This effort resulted in reduced costs associated with mailing notices of violation and reduced staff time with respect to calling individual public water systems.

GovDelivery

The Department uses an email subscription service, known as GovDelivery, to provide updates on drinking water-related activities to the public. The Department uses this tool to promote TMF assistance efforts such as training announcements. Staff use data collected in the biennial TMF survey to prioritize training topics and locations, and to notify interested parties through GovDelivery. The Department continues to explore ways to use this tool for effective communication with the public.

Twitter

The Department uses Twitter to engage with citizens and provide information on activities related to the Department's mission. At the end of state fiscal year 2020, the Department had more than 10,000 Twitter followers and had posted approximately 90 drinking water-related tweets during the reporting period.

Connect with the Missouri Department of Natural Resources on Twitter @MoDNR.

Continued and Future Strategy Implementation

In accordance with section 1420(c) of the Safe Drinking Water Act, the Department will continue to implement the State's capacity development strategies for new and existing public water systems. Future implementation of the strategies will focus on compliance assistance as it pertains to technical, managerial, and financial capacity.